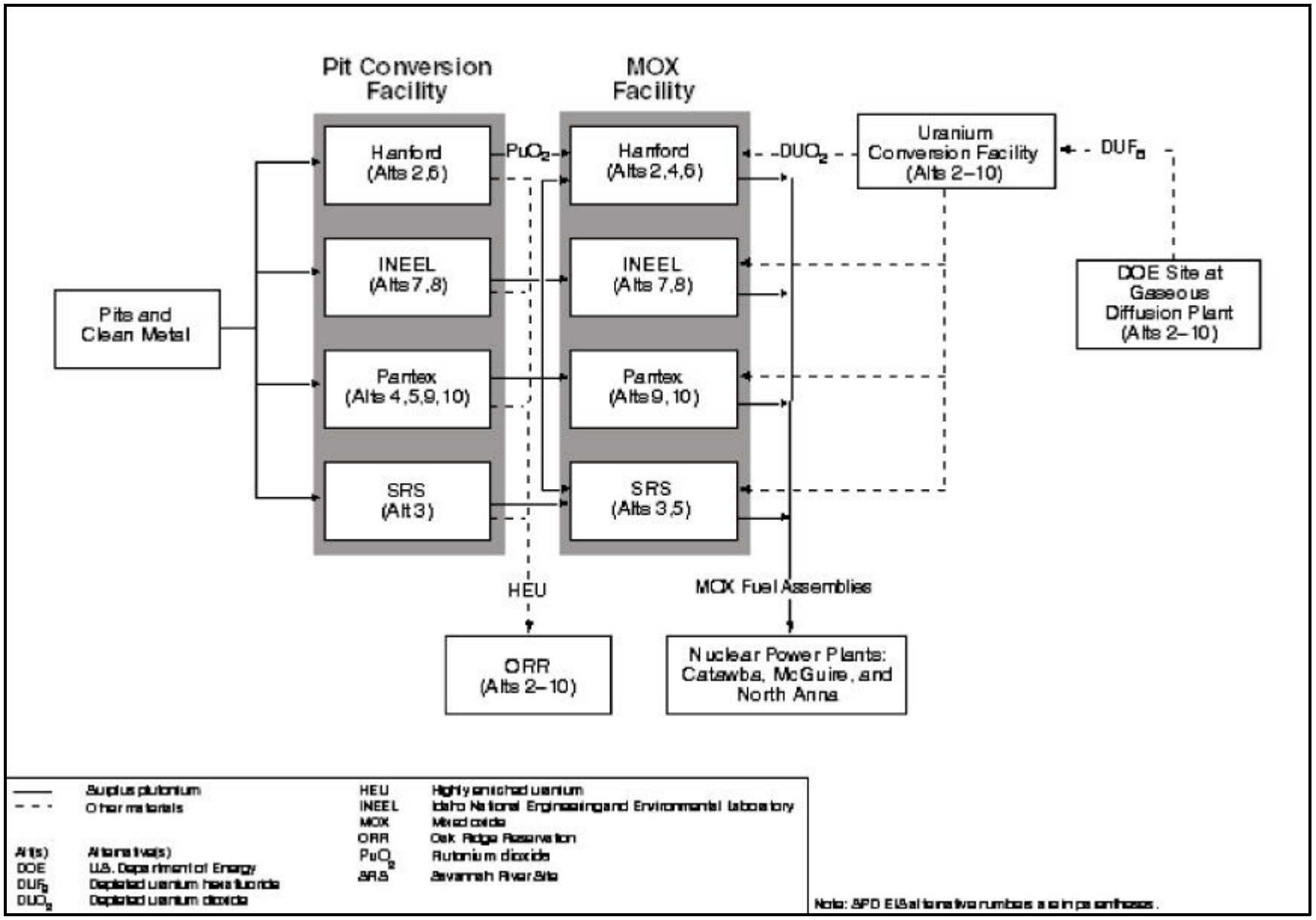

Figure 2–18. Transportation Requirements for MOX Fuel Fabrication

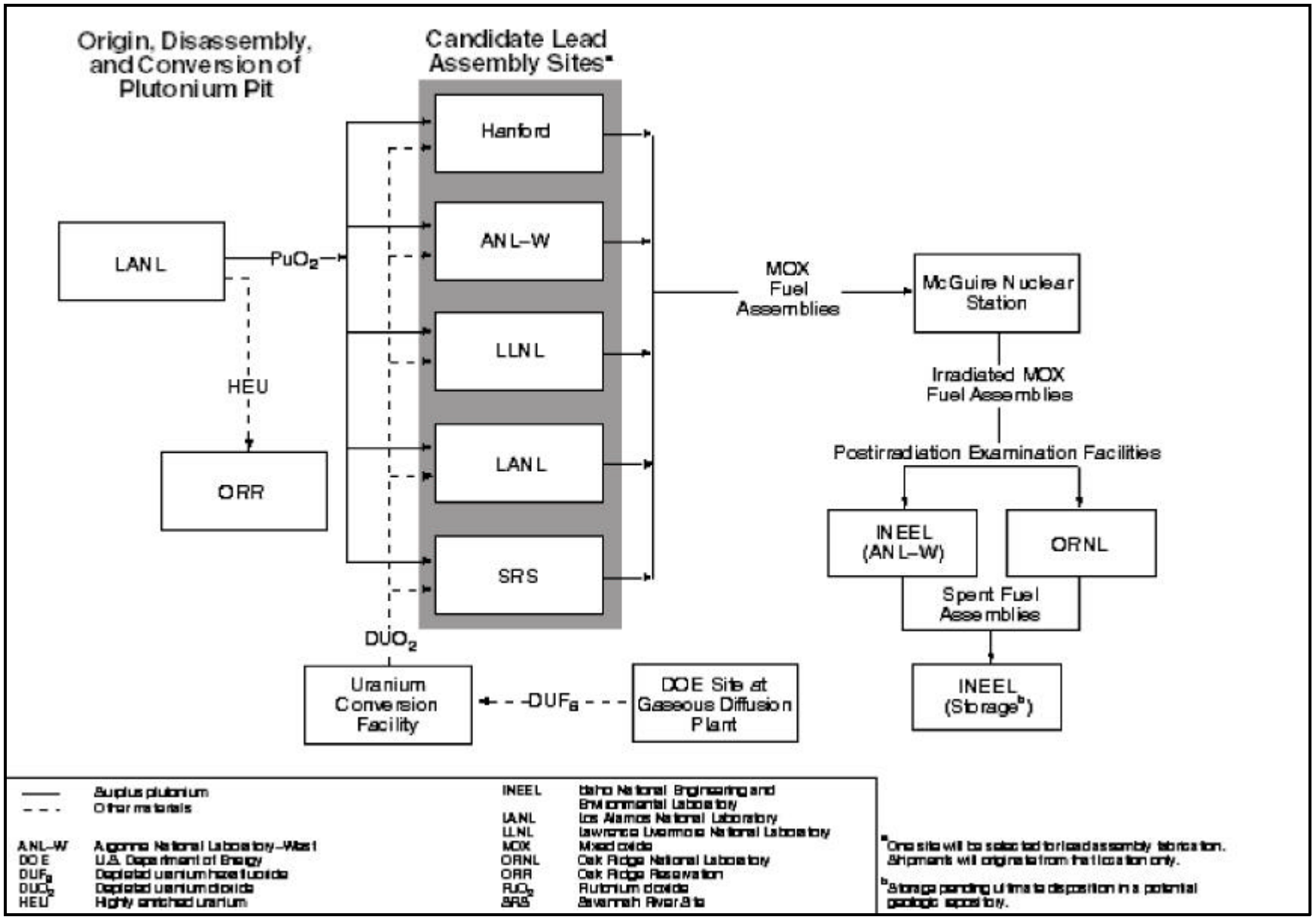

Figure 2–19. Transportation Requirements for Lead Assembly Fabrication

with site practices for this type of shipment. This intrasite transportation could require temporary road closures while the material would be moved from one area of the site to another. This practice would provide all needed security and mitigate potential risk to the public, without requiring the use of SST/SGTs for intrasite transfers.

The depleted uranium needed to support this effort is assumed to be shipped from one of DOE's storage areas at the Portsmouth Gaseous Diffusion Plant near Piketon, Ohio, to the nuclear fuel fabrication facility in Wilmington, North Carolina, for conversion, and then to the lead assembly fabrication site. All the transportation associated with depleted uranium would be via commercial truck.

After fabrication, the lead assemblies would be shipped to McGuire Nuclear Station[16] near Huntersville, North Carolina, for irradiation. These shipments would be made in SST/SGTs because unirradiated MOX fuel in large enough quantities is subject to security concerns similar to those associated with weapons-grade plutonium. Although the Preferred Alternative would fabricate lead assemblies at LANL, the lead assemblies could be fabricated as far away from McGuire as Hanford. Because transportation impacts are proportional to distance, the transportation analysis assumes, in order to evaluate the maximum potential impact, that the reactor will be 5,000 km (3,100 mi) from the lead assembly fabrication facility, the approximate distance between Hanford and McGuire. Transportation impacts would be proportionally less for other sites closer to McGuire.

After irradiation, the lead assemblies may be shipped from the reactor site to a postirradiation examination facility for analysis. Postirradiation examination, if required, would occur at one of two DOE sites, ANL–W or ORNL. As discussed in Section 2.1.3, these are the only two sites that have the capability to conduct postirradiation examination without major modifications to facility and processing capabilities. These shipments would be via commercial truck because the MOX fuel would be irradiated, thereby removing the proliferation concerns associated with plutonium. Because the actual postirradiation facility that would be used has not been selected (ORNL has been identified as the preferred location), the transportation analysis assumes that it will be 4,000 km (2,500 mi) from the reactor site where the lead assemblies were irradiated. This is the approximate distance between McGuire and ANL–W, the maximum distance that the irradiated lead assemblies would be transported. Any postirradiation examination activities and shipments of spent fuel remaining after postirradiation examination would comply with the Consent Order and Settlement Agreement in Public Service Company of Colorado v. Batt and all other applicable agreements and orders, including provisions concerning removal of the material from the applicable examination site and limits on the number of truck shipments to the site.

2.4.4.5 Other Transportation Requirements

All the alternatives being considered in this SPD EIS require some overland transportation of wastes from the proposed disposition facilities to treatment, storage, or disposal facilities. The proposed action does not result in a large increase in waste generation at any of the candidate sites, and transportation would be handled in the same manner as other site waste shipments. In addition, the shipments would not represent any new, different, or additional risks beyond those associated with existing waste shipments at these sites, as analyzed in the WM PEIS. The possible exceptions are the alternatives that consider siting disposition facilities at Pantex and the alternative that considers placing the lead assembly fabrication facility at LLNL. Because Pantex does not currently generate any TRU waste and does not have any TRU waste in storage, the WM PEIS did not consider TRU waste being shipped from Pantex to the Waste Isolation Pilot Plant (WIPP). Therefore, a small number of shipments of TRU waste to WIPP via commercial truck have been included in the transportation analysis in this SPD EIS. In addition, the projected amount of LLW generated by the proposed action would represent a large percentage of this waste type at both Pantex and LLNL, as analyzed in the WM PEIS. Because these sites ship

[16] Based on information provided by DCS, DOE has identified McGuire as its preference for irradiating lead assemblies.

LLW to the Nevada Test Site (NTS) for disposal, the transportation analysis in this SPD EIS includes a small number of shipments of LLW from Pantex and LLNL to NTS via commercial carrier.

2.5 ALTERNATIVE 1: NO ACTION

In the No Action Alternative, surplus weapons-usable plutonium materials in storage at various DOE sites shown in Figure 1–1 would remain at those locations. The vast majority of pits would continue to be stored at Pantex, and the remaining plutonium in various forms would continue to be stored at Hanford, INEEL, LLNL, LANL, RFETS, and SRS. The No Action Alternative would not satisfy the purpose and need for the proposed action because DOE's disposition decisions in the *Storage and Disposition PEIS* ROD would not be implemented. The ROD announced that, consistent with the Preferred Alternative in the *Storage and Disposition PEIS*, DOE had decided to reduce, over time, the number of locations where the various forms of plutonium are stored, through a combination of storage and disposition alternatives. Implementation of much of this decision requires the movement of surplus materials to disposition facility locations. Pits that have been moved from RFETS to Pantex would be relocated in accordance with the *Storage and Disposition PEIS* ROD, as amended.[17] Other surplus materials would continue to be stored indefinitely at their current locations, with the exception that DOE is considering leaving the repackaged surplus pits in Zone 4 at Pantex for long-term storage.[18] An appropriate environmental review will be conducted when the specific proposal for this change has been determined (e.g., whether additional magazines need to be air-conditioned). The analysis in this SPD EIS assumes that the surplus pits are stored in Zone 12 in accordance with the ROD for the *Storage and Disposition PEIS*.

2.6 ALTERNATIVE 2: ALL FACILITIES AT HANFORD

Pit Conversion in FMEF; Immobilization in FMEF and the HLW Vitrification Facility; MOX Fuel Fabrication in New Construction

This alternative would involve locating the three proposed surplus plutonium disposition facilities in the 400 Area at Hanford, combining the use of an existing building, FMEF, with new construction (see Figure 2–20). Canister filling would be accomplished at the planned HLW vitrification facility in the 200 East Area[19] (see Figure 2–21), about 24 km (15 mi) northwest of the 400 Area. FMEF, completed in 1984, is a reinforced concrete process building with an attached mechanical equipment wing on the west side, and an entry wing with administrative space across the south side. The building has six levels, two of which are below grade. FMEF was designed and constructed to fabricate fast breeder reactor fuel, but it has not been used for any major projects to date. The building has been modified since 1984, and the utility systems and support systems, including the ventilation system, have been completed. Designed to handle highly radioactive materials, FMEF includes a number of thick-walled cells surrounded by corridors. Space for offices,

[17] Recent studies have indicated that cost savings could be realized from the transfer of nonpit materials from RFETS and Hanford to SRS earlier than specified in the *Storage and Disposition PEIS* ROD. A Supplement Analysis was prepared, and based on this analysis, DOE determined that a supplemental PEIS would not be needed; an amended ROD was issued in August 1998 (63 FR 43386) and included decisions to accelerate shipment of all nonpit surplus plutonium from RFETS to SRS and to relocate all Hanford surplus plutonium to SRS, should SRS be selected as the immobilization disposition site.

[18] Should the No Action Alternative be chosen, the ROD pursuant to this SPD EIS would also address movement of the remaining surplus nonpit plutonium from RFETS in support of its planned closure in 2006.

[19] The planned HLW vitrification facility is described in the *Tank Waste Remediation System Final Environmental Impact Statement* and is currently scheduled to be available in a timeframe that would meet the needs of the surplus plutonium disposition program.

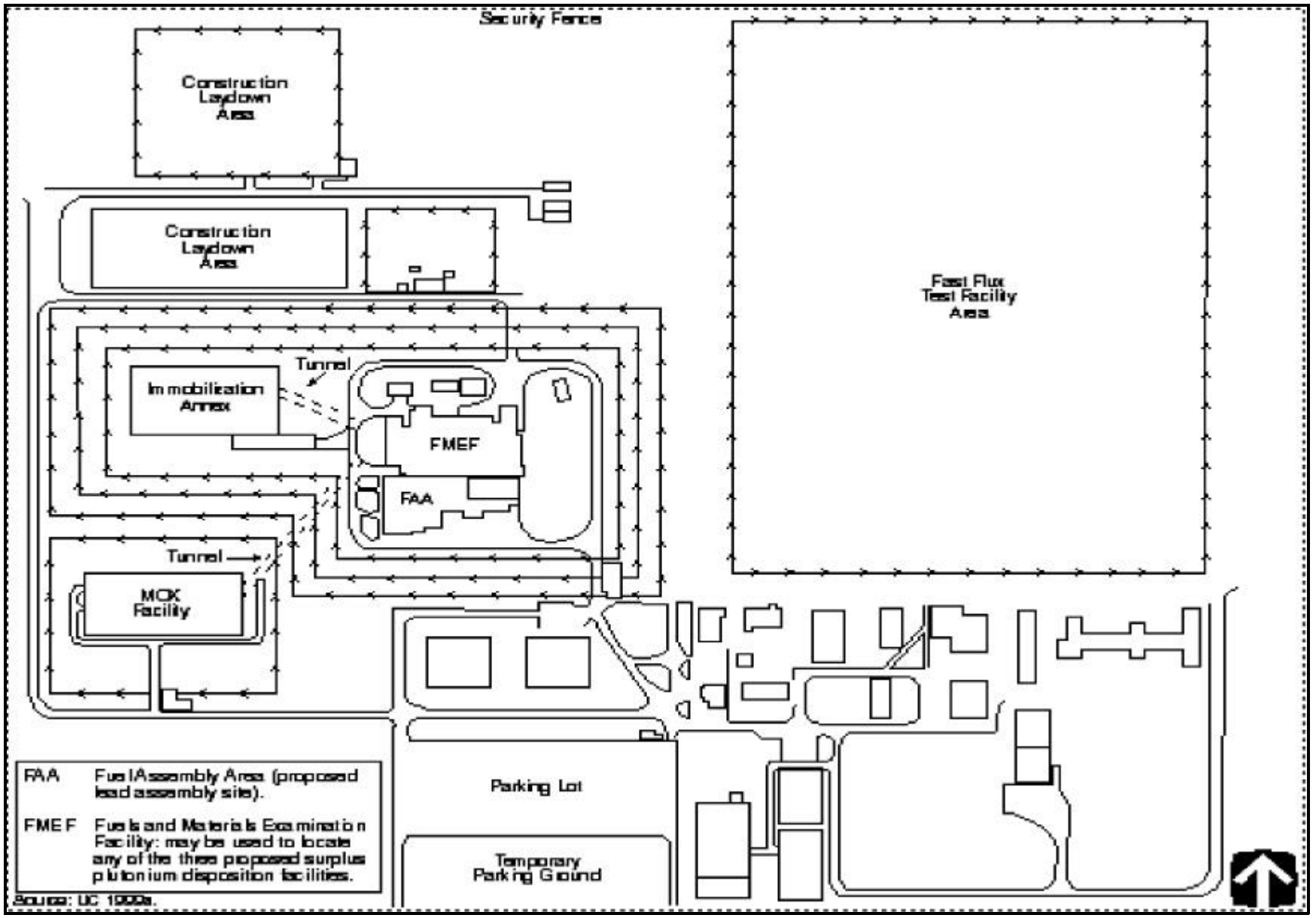

Figure 2–20. Proposed Facility Locations in the 400 H-Area at Hanford (Hybrid Alternative Shown)

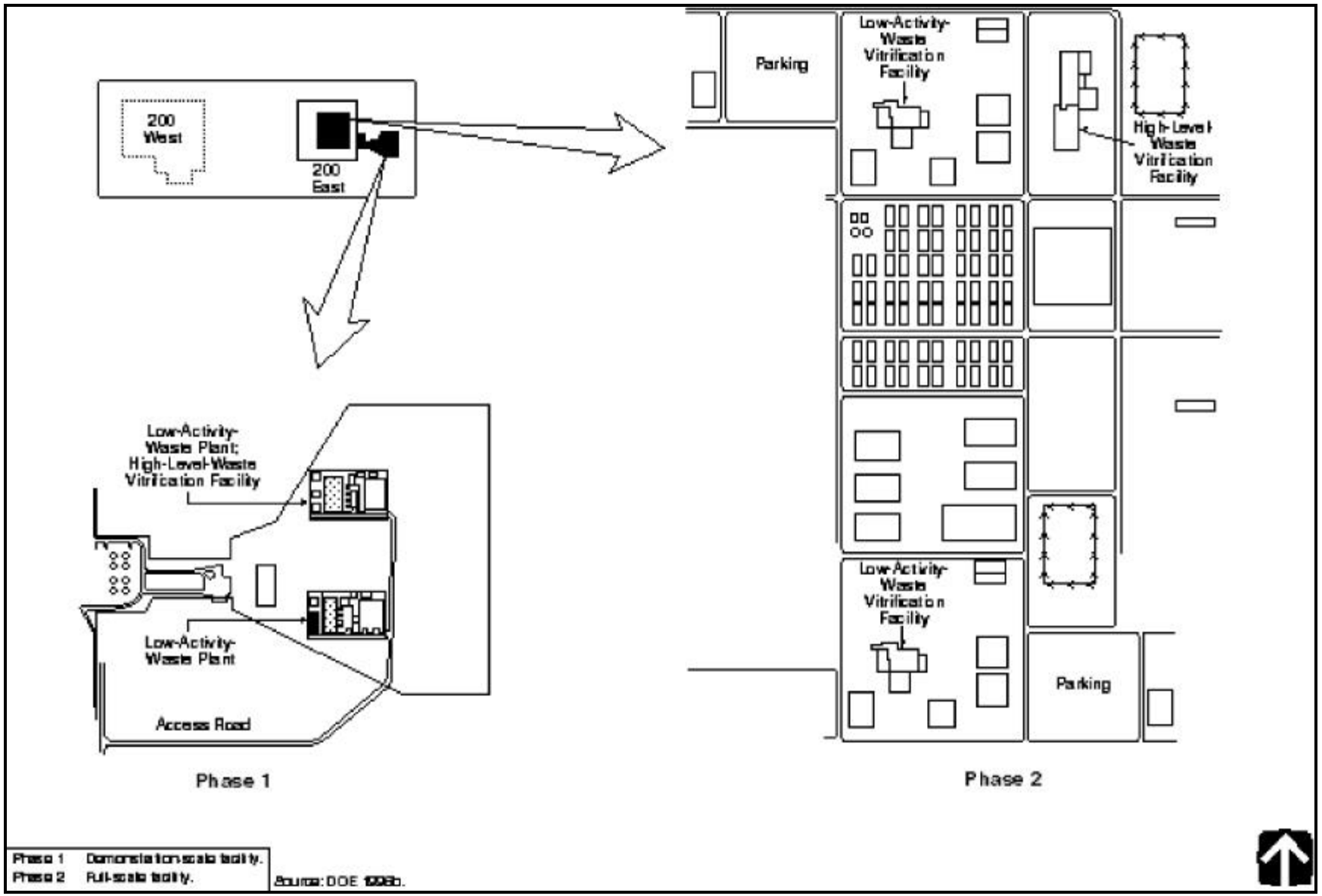

Figure 2–21. Location of Planned HLW Vitrification Facility in the 200 Area at Hanford (Proposed Location of Canister-Filling Operations)

laboratories, control rooms, utilities, and other activities is available around the interior perimeter of the building. Modification to the interior spaces would be required to use the building for surplus plutonium disposition activities. No radioactive materials have been introduced into the building, so the modification would neither generate radioactive waste nor contribute radiological dose to the construction workforce. The building is large enough to house facilities for only two of the three proposed disposition activities. Therefore, this alternative calls for collocation of the pit conversion and immobilization facilities in FMEF, and the construction of a new building close to FMEF to house the MOX facility.

In this alternative, the pit conversion facility would occupy the lower floors of FMEF, and the immobilization facility, the upper two floors. About 13,000 m^2 (140,000 ft^2) of space on the −35-ft, −17-ft, ground, and +21-ft levels would be modified to support pit disassembly and conversion activities. Not all the space on every floor would be required for pit disassembly and conversion activities, but the floors would be predominately associated with that process.

Plutonium conversion and immobilization activities would primarily occupy the +42- and +70-ft levels. While a portion of the +42-ft level would be shared by the two facilities, most of the floor would be dedicated to the immobilization facility, which would occupy about 17,000 m^2 (183,000 ft^2). Both facilities would share utilities, loading docks, and security assets. The large shipping and receiving area of FMEF would allow for housing a number of SST/SGTs.

The immobilization facility would also require the construction of a two-story annex northwest of FMEF. This building would provide approximately 4,600 m^2 (49,000 ft^2) of space for canister-loading activities and some analytical laboratory operations. The security fence surrounding FMEF would be extended to include this additional area. Material movement between FMEF and the annex would occur either by surface vehicle or through an underground tunnel between the two facilities within the protected security zone.

For the MOX facility, a new two-story building of about 20,000 m^2 (215,000 ft^2) would be constructed west of FMEF. A secure underground tunnel would connect the two buildings for special nuclear material transfers. This tunnel would be locked and alarmed under normal operating conditions and subject to the same security measures on both sides as the building perimeters, both to ensure the protection of the special nuclear materials and to maintain the independence of the MOX facility. The tunnel would be opened in accordance with safeguards and security procedures for the transfer of plutonium dioxide from the pit conversion facility to the MOX facility, and would be closed immediately upon completion of transfer activities. Other than being joined to it by this tunnel, the MOX facility would be independent of FMEF, and would be inside its own fenced security area. Various nonhardened support buildings totaling about 2,300 m^2 (25,000 ft^2) would be needed to support the MOX mission. The proposed facilities would use such existing Hanford services as sitewide security (although there would be additional security assigned to each of the three disposition facilities), emergency services, environmental monitoring, and waste management.

Construction would begin in about 2001, with modifications to FMEF for the pit conversion facility, and would continue through completion of the MOX facility in about 2006. Operations would commence in about 2004 with pit disassembly and conversion, and would continue until about 2019 when the MOX and immobilization facilities have completed their missions. Operation of the MOX facility would not begin until the pit conversion facility had been operating for a year, so that feed material would be available for MOX fuel fabrication.

2.7 ALTERNATIVE 3: ALL FACILITIES AT SRS

Pit Conversion and MOX Fuel Fabrication in New Construction; Immobilization in New Construction and DWPF

2.7.1 [Section heading deleted.]

This alternative would involve locating the three proposed surplus plutonium disposition facilities in newly constructed buildings near the area currently designated for APSF in F-Area at SRS (see Figure 2–22). In addition, the canister receipt area at DWPF in S-Area, about 6 km (3.7 mi) east of F-Area (see Figures 2–5 and 2–23), would be modified as described in Section 2.4.2.1 to accommodate receipt and processing of the canisters transferred from the immobilization facility for filling with vitrified HLW. [Text deleted.]

In the SPD Draft EIS, alternatives that considered locating the disposition facilities in new construction at SRS used the proposed APSF as a receiving facility for SST/SGT shipments; storage vaults for plutonium dioxide and metal; and for the pit conversion and immobilization facilities, nondestructive assay facilities. Therefore, the SPD Draft EIS analyzed somewhat smaller disposition facilities at SRS than at the other candidate sites. DOE has recently decided to delay the construction of APSF. Because the schedule for APSF is uncertain, this SPD Final EIS has been modified to disregard any benefit to the proposed facilities as a result of APSF being present at SRS. This SPD EIS now presents the environmental impacts that would be associated with construction and operation of disposition facilities at SRS that are stand-alone and include no reliance on APSF for storage space or other functions. Throughout this SPD EIS, references to APSF have been qualified by the phrase "if built" or a similar phrase, and no credit has been taken in the environmental analyses for the use of APSF.

The pit conversion facility now analyzed at SRS is identical to that proposed in the Pantex alternatives, where it has always been considered a stand-alone facility. In the current immobilization facility design, some space would be available to partially offset the use of APSF for functions such as storage or accountability measurements. However, without APSF, construction of truck bays and other minor modifications (up to approximately 980 m^2 [10,500 ft^2]) would be necessary. The MOX facility proposed for SRS has also been replaced with the larger stand-alone facility that has been proposed for the other candidate sites. Should DOE decide to collocate all three disposition facilities at SRS, as indicated in the Preferred Alternative (see Section 1.6), the final design of these facilities would coordinate potential common functions among the facilities to the extent practical as a means to reduce space requirements and the associated environmental impacts.

As shown in Figure 2–22, the immobilization facility would be east of the area currently designated for APSF, the pit conversion facility due south of the immobilization facility, and the MOX facility due south of the pit conversion facility.[20] To accommodate all three disposition facilities at this location, it would be necessary to move the F-Area fence line to incorporate more area. These facilities would be connected to each other by material transfer tunnels. These tunnels would be locked and alarmed under normal operating conditions and subject to the same security measures on both sides as the building perimeters, both to ensure the protection of the special nuclear materials and to maintain the independence of the MOX facility. The tunnels would be opened in accordance with safeguards and security procedures for the transfer of special nuclear materials and would be closed immediately upon completion of transfer activities. Other than being joined by the tunnel, the MOX

[20] As discussed in Section 4.26.4.4.1, facility construction would avoid any cultural resource areas eligible or potentially eligible for nomination to the National Register of Historic Places.

facility would be independent of the other plutonium disposition facilities and would be inside its own fenced security area.

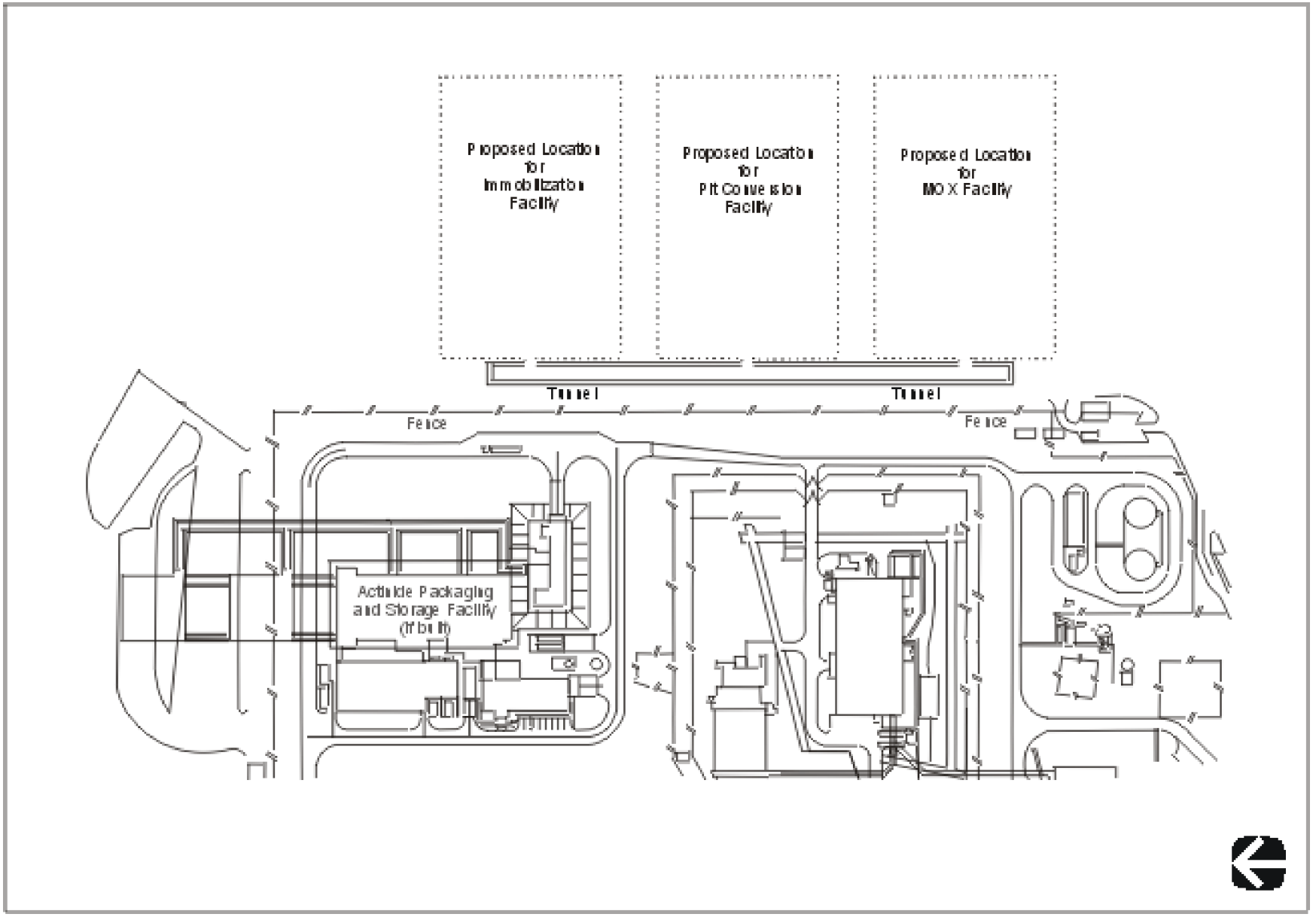

Figure 2–22. Proposed Facility Locations in F-Area at SRS

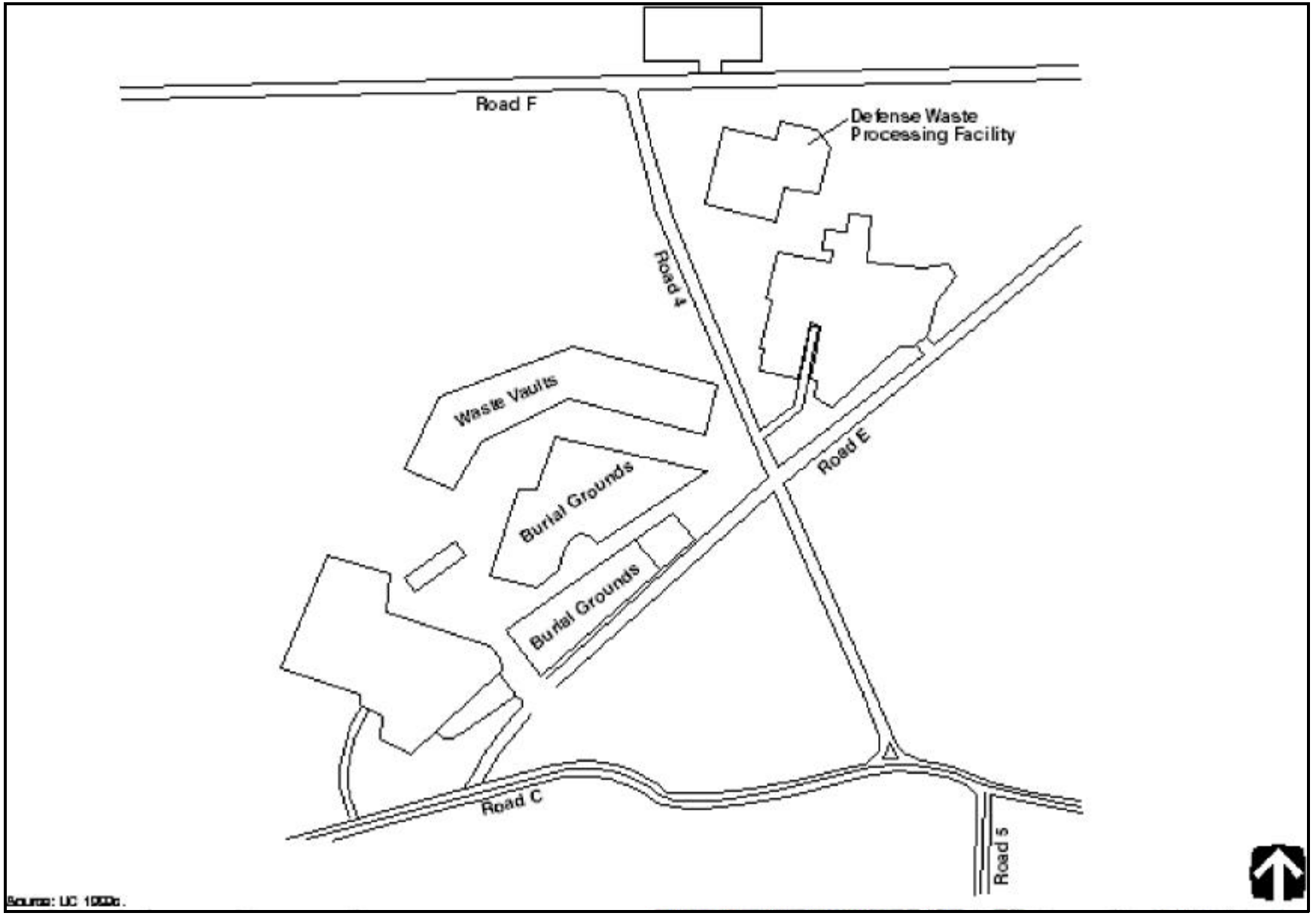

Figure 2–23. Location of DWPF in S-Area at SRS (Proposed Location of Canister-Filling Operations)

The pit conversion facility would occupy about 18,600 m^2 (200,000 ft^2) on two levels, one or both of which may be below grade. Another 2,400 m^2 (26,000 ft^2) would be required for a utility building, standby generator, and an electrical substation in F-Area. The total space required for the immobilization facility would be about 25,000 m^2 (269,000 ft^2). Of that, 23,000 m^2 (248,000 ft^2) would be in new facilities in F-Area; the remainder would be space in existing facilities that would not require further modification. The immobilization facility would have four levels, three of which would be above grade. The main process area would be at grade level, below which a small basement level would contain transfer corridors and a fire-water collection facility. The third level would house support equipment such as heating, ventilation, and air-conditioning systems, and electrical and mechanical utilities. In the center of the facility, a core "stack" or shaft would extend from the main processing level up to the small fourth level for vertical processing of materials. Two smaller, two-level structures immediately adjacent and connected to the main processing building would serve as entry control and provide administrative space. The MOX facility would occupy about 20,000 m^2 (215,000 ft^2) on two levels, one below grade. Another 2,300 m^2 (25,000 ft^2) would be required for new support buildings in F-Area. The proposed facilities would use such existing SRS services as sitewide security (although there would be additional security assigned to each of the three disposition facilities), emergency services, environmental monitoring, and waste management.

Construction would commence in about 2001 with the pit conversion facility, and would continue through completion of the MOX facility in about 2006. Operations would commence in about 2004 with pit conversion, and would continue until about 2019, when the MOX and immobilization facilities have completed their missions. Operation of the MOX facility would not begin until the pit conversion facility had been operating for a year, so that feed material would be available for MOX fuel fabrication.

2.7.2 [Section deleted because alternative deleted.]

2.8 ALTERNATIVE 4: PIT CONVERSION AT PANTEX; MOX FUEL FABRICATION AND IMMOBILIZATION AT HANFORD

2.8.1 Alternative 4A

Pantex: Pit Conversion in New Construction
Hanford: MOX Fuel Fabrication in New Construction; Immobilization in FMEF and HLW Vitrification Facility

This alternative would involve locating the pit conversion facility at Pantex and the immobilization and MOX facilities at Hanford. The pit conversion and MOX facilities would be in new construction, and FMEF would be modified to house the immobilization facility. Canister filling would be accomplished at the planned HLW vitrification facility scheduled for construction in the 200 East Area, about 24 km (15 mi) northwest of the 400 Area (see Figures 2–20 and 2–21).

At Pantex, the pit conversion facility would be in a new building in Zone 4 West, with some support facilities to the west of, and adjacent to, Zone 4 West (see Figure 2–24). Utilities and storage vaults would be on the ground floor of the pit conversion facility; and the main processing and loading areas, offices, and support areas, in a below-grade basement. The building would occupy about 18,600 m^2 (200,000 ft^2). New buildings totaling 5,300 m^2 (57,000 ft^2) would have to be constructed to support the pit conversion facility. Additional space in existing buildings in Zone 4 West would be used for administration, access control, warehousing, and other services. New or upgraded electrical, water, and gas supply lines would be constructed from existing trunk lines. The proposed pit conversion facility would use such existing Pantex services as sitewide security (although there would be an additional security assigned to the facility), emergency services, environmental monitoring, and waste management. TRU waste storage would be provided in the main pit conversion facility

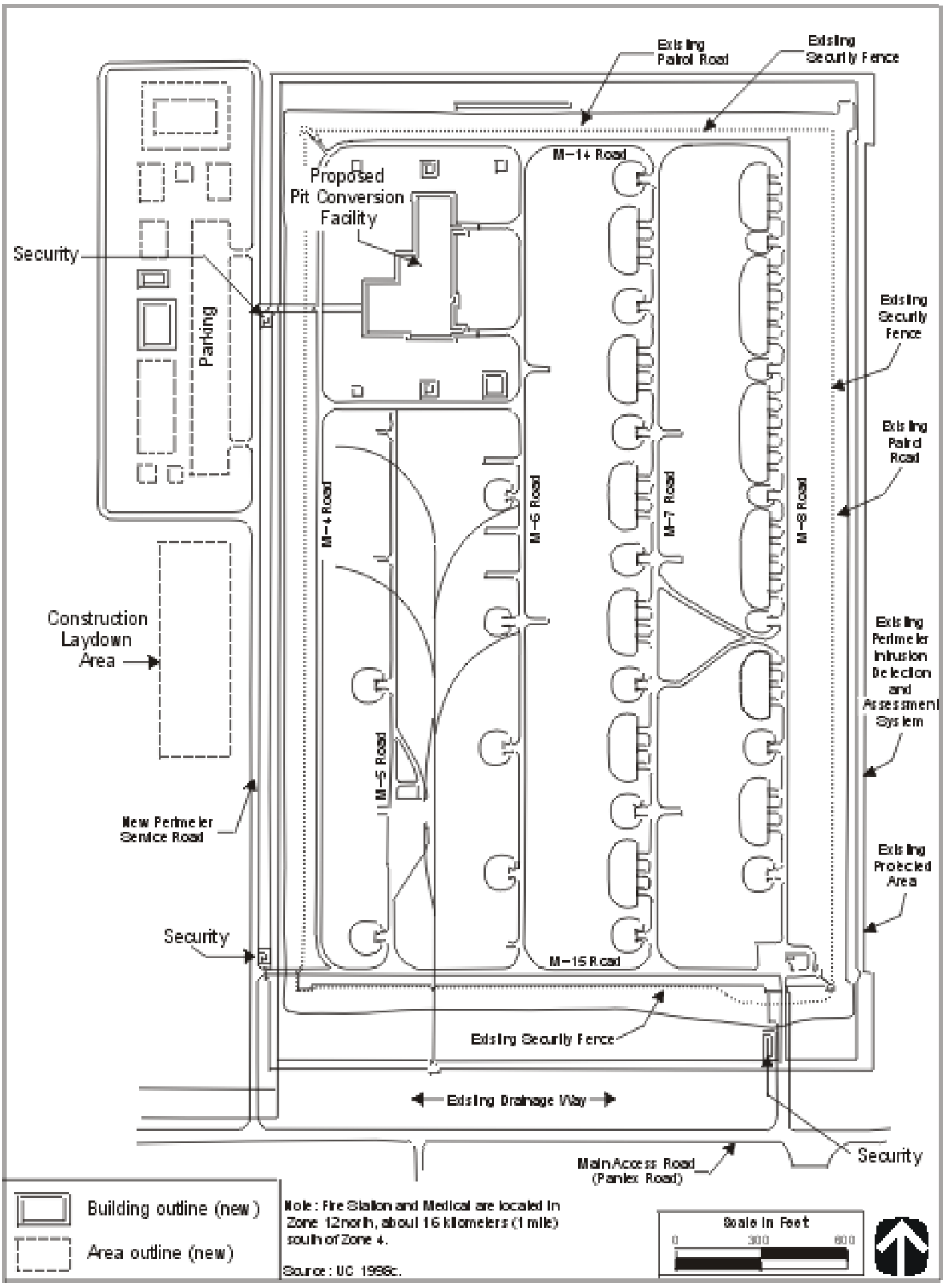

Figure 2–24. Proposed Pit Conversion Facility Location in Zone 4 West at Pantex

or in ancillary facilities. Construction would commence in about 2001 and continue through about 2003. Operations would commence in about 2004 and continue until about 2014.

Facilities at Hanford would be in the 400 Area, the immobilization facility in the FMEF and the MOX facility in new construction near FMEF. Immobilization would be concentrated on the +42- and +70-ft levels of FMEF, although process support functions would be conducted on all six floors of the building. The total space required for the immobilization facility would be about 20,000 m^2 (215,000 ft^2); the remainder of FMEF would be available for other missions.

For the MOX facility, a new two-story building of about 20,000 m^2 (215,000 ft^2) would be constructed west of FMEF. This facility would be independent of FMEF and inside its own fenced security area. In addition to the main process building, the MOX facility would require 2,300 m^2 (25,000 ft^2) of new support buildings throughout the 400 Area. The proposed disposition facilities would use such existing Hanford services as sitewide security (although there would be additional security assigned to each of the disposition facilities), emergency services, environmental monitoring, and waste management.

Modification and new construction at Hanford would commence in about 2002 and continue through about 2006. The immobilization facility would commence operations in about 2005; the MOX facility, in about 2006. The MOX facility would operate until about 2019; the immobilization facility until 2016. Operation of the MOX facility would not begin until the pit conversion facility had been operating for at least a year, so that feed material would be available for MOX fuel fabrication.

2.8.2 Alternative 4B

Pantex: Pit Conversion in New Construction
Hanford: Plutonium Conversion and Immobilization in FMEF and HLW Vitrification Facility; and MOX Fuel Fabrication in FMEF

This alternative would involve locating the pit conversion facility in new construction at Pantex and the immobilization and MOX facilities in FMEF at Hanford. Canister filling would be accomplished at the planned HLW vitrification facility scheduled for construction in the 200 East Area, about 24 km (15 mi) northwest of the 400 Area. At Pantex, the pit conversion facility would be the same as the one described for Alternative 4A in Section 2.8.1. This alternative differs from Alternative 4A in that the MOX facility would be located in FMEF rather than in new construction.

At Hanford, FMEF would be modified to contain both the MOX and immobilization facilities. While these facilities would share the building, they would be totally separate from each other to accommodate NRC regulation of the MOX facility. The immobilization facility would occupy about 14,000 m^2 (150,000 ft^2), primarily on the ground and +21-ft levels. Only the receiving area would be shared by the two facilities, but the area would be modified to physically separate the two sides and provide independent access to the two facilities.

The immobilization facility would also require the construction of a two-story annex northwest of FMEF. This building would provide approximately 6,700 m^2 (72,000 ft^2) of space for canister-loading activities and most analytical laboratory operations. The security fence surrounding FMEF would be extended to include this additional area. Material movement between FMEF and the annex would occur either by surface vehicle or through an underground tunnel between the two facilities within the protected security zone.

To implement the MOX mission at FMEF, the building would be remodeled and annexes added to accommodate the functions and processes required for MOX fuel fabrication. The MOX facility would occupy about 8,200 m^2 (88,000 ft^2) on the ground, +42-ft, and +70-ft levels of FMEF. New annex areas on the north and east sides of

the building for utilities and an entrance area with office space would add another 1,900 m^2 (20,000 ft^2) to the FMEF structure. Partition walls and other isolation mechanisms would be used to completely segregate the MOX portion of the building from the other portions. In addition to the main process building, the MOX facility would require 4,200 m^2 (45,000 ft^2) of new support buildings throughout 400 Area. The proposed disposition facilities would use such existing Hanford services as sitewide security (although there would be additional security assigned to each of the disposition facilities), emergency services, environmental monitoring, and waste management.

Modification of FMEF would commence in about 2002 and continue through about 2006. The immobilization facility would commence operations in about 2005; the MOX facility, in about 2006. The MOX facility would operate until about 2019; the immobilization facility until 2016. Operation of the MOX facility would not begin until the pit facility had been operating for at least a year, so that feed material would be available for MOX fuel fabrication.

2.9 ALTERNATIVE 5: PIT CONVERSION AT PANTEX; MOX FUEL FABRICATION AND IMMOBILIZATION AT SRS

Pantex: Pit Conversion in New Construction
SRS: MOX Fuel Fabrication in New Construction; and Immobilization in New Construction and DWPF

2.9.1 [Section heading deleted.]

This alternative would involve locating the pit conversion facility at Pantex and the immobilization and MOX facilities in new construction near the area currently designated for APSF at SRS. In addition, the canister receipt area at DWPF in S-Area would be modified as described in Section 2.4.2.1 to accommodate receipt and processing of the canisters transferred from the immobilization facility for filling with vitrified HLW. At Pantex, the pit conversion facility would be the same as the one described for Alternative 4A in Section 2.8.1.

As shown in Figure 2–22, the immobilization facility would be east of the area currently designated for APSF, and the MOX facility south of the immobilization facility. (The pit conversion facility, shown on this map, would not be located at SRS.) To accommodate both the immobilization and MOX facilities, it would be necessary to move the F-Area fence line to incorporate more area. These facilities would be constructed as described for Alternative 3 in Section 2.7.

Construction at SRS would commence in about 2002 and continue through about 2006. The immobilization facility would commence operations in about 2005; the MOX facility, in about 2006. The MOX facility would operate until about 2019; the immobilization facility until 2016. Operation of the MOX facility would not begin until the pit facility had been operating for at least a year, so that feed material would be available for MOX fuel fabrication.

2.9.2 [Section deleted because alternative deleted.]

2.10 ALTERNATIVE 6: PIT CONVERSION AND MOX FUEL FABRICATION AT HANFORD; IMMOBILIZATION AT SRS

2.10.1 Alternative 6A

Hanford: Pit Conversion in FMEF; MOX Fuel Fabrication in New Construction
SRS: Immobilization in New Construction and DWPF

This alternative would involve locating the pit conversion and MOX facilities at Hanford, in FMEF and new construction, respectively; and the immobilization facility in new construction near the area currently designated for APSF at SRS. In addition, the canister receipt area at DWPF in S-Area would be modified as described in Section 2.4.2.1 to accommodate receipt and processing of the canisters transferred from the immobilization facility for filling with vitrified HLW. In this alternative, the pit conversion facility would occupy about 13,000 m^2 (140,000 ft^2) of space on the −35-ft, −17-ft, ground, and +21-ft levels of FMEF, as described in Section 2.6; the remainder of FMEF would be available for other missions. A new two-story building would be constructed for the MOX facility, as described in Section 2.6. The proposed disposition facilities would use such existing Hanford services as sitewide security (although there would be additional security assigned to each of the disposition facilities), emergency services, environmental monitoring, and waste management.

Construction would commence in about 2001, with modifications to FMEF for the pit conversion facility, and would continue through completion of the MOX facility in about 2006. The pit conversion facility would commence operations in about 2004; the MOX facility, in about 2006. Operations would continue until about 2019, when the MOX facility has completed its mission. Operation of the MOX facility would not begin until the pit conversion facility had been operating for at least a year, so that feed material would be available for MOX fuel fabrication.

The new immobilization facility at SRS would be east of the area currently designated for APSF, as described in Section 2.7. The total space required for that facility would be about 25,000 m^2 (269,000 ft^2). Of that, 23,000 m^2 (248,000 ft^2) would be in new facilities; the remainder would be space in existing facilities that would not require further modification. To accommodate the immobilization facility, it would be necessary to move the F-Area fence line out to incorporate more area. The immobilization facility would use such existing SRS services as sitewide security (although there would be an additional security assigned to the facility), emergency services, environmental monitoring, and waste management. Construction would commence in about 2002 and continue through about 2005. Operations would commence in about 2005 and continue until about 2016.

2.10.2 Alternative 6B

Hanford: Pit Conversion and MOX Fuel Fabrication Collocated in FMEF
SRS: Immobilization in New Construction and DWPF

This alternative would involve locating both the pit conversion and MOX facilities in FMEF at Hanford, and the immobilization facility in new construction near the area currently designated for APSF at SRS. In addition, the canister receipt area at DWPF in S-Area would be modified as described in Section 2.4.2.1 to accommodate receipt and processing of the canisters transferred from the immobilization facility for filling with vitrified HLW. In this alternative, the immobilization facility would be constructed and operated at SRS as described for Alternative 6A in Section 2.10.1.

FMEF would be modified to contain both the pit conversion and MOX facilities. While these facilities would share the building, they would be totally separate from each other to accommodate NRC regulation of the MOX facility. The pit conversion facility would occupy about 13,000 m^2 (140,000 ft^2) of space on the −35-ft, −17-ft,

ground, and +21-ft levels of FMEF, as described in Section 2.6. Plutonium dioxide would be moved from the pit conversion facility to the MOX facility in a secure elevator.

To implement the MOX mission at FMEF, the building would be remodeled and annexes added to accommodate all the functions and processes required for MOX fuel fabrication. The MOX facility would occupy about 8,200 m^2 (88,000 ft^2) on the ground, +42-ft, and +70-ft levels of FMEF. The new annex areas on the north and east sides of the building for utilities and an entrance area with office space would add another 1,900 m^2 (20,000 ft^2) to the FMEF structure. Partition walls and other isolation mechanisms would be used to completely segregate the MOX portion of the building from the other portions. In addition to the main process building, the MOX facility would require 4,200 m^2 (45,000 ft^2) of new support buildings throughout 400 Area. The proposed disposition facilities would use such existing Hanford services as sitewide security (although there would be additional security assigned to each of the disposition facilities), emergency services, environmental monitoring, and waste management.

Modification of FMEF would commence in about 2001 and would continue through about 2006. The pit conversion facility would commence operations in about 2004; the MOX facility, in about 2006. Operations would cease when the MOX facility has shut down in about 2019. Operation of the MOX facility would not begin until the pit facility had been operating for at least a year, so that feed material would be available for MOX fuel fabrication.

2.10.3 [Section deleted because alternative deleted.]

2.10.4 [Section deleted because alternative deleted.]

2.11 ALTERNATIVE 7: PIT CONVERSION AND MOX FUEL FABRICATION AT INEEL; IMMOBILIZATION AT SRS

INEEL: Pit Conversion in the Fuel Processing Facility; MOX Fuel Fabrication in New Construction
SRS: Immobilization in New Construction and DWPF

2.11.1 [Section heading deleted.]

This alternative would involve locating the pit conversion facility in the Fuel Processing Facility (FPF) and the MOX facility in new construction in the Idaho Nuclear Technology and Energy Center (INTEC) area at INEEL, and the immobilization facility in new construction near the area currently designated for APSF at SRS. In addition, the canister receipt area at DWPF in S-Area would be modified as described in Section 2.4.2.1 to accommodate receipt and processing of the canisters transferred from the immobilization facility for filling with vitrified HLW. The immobilization facility would be implemented at SRS as described for Alternative 6A in Section 2.10.1.

FPF has six levels, three below grade. It is structurally complete, but has never been used. Construction was started in 1986, but discontinued in 1993, leaving essentially a concrete shell with temporary lighting and ventilation. As the building was designed to handle highly radioactive materials, it includes a number of interior thick-walled cells surrounded by corridors and access ways. Building utility areas and office space surround the corridors of the above-grade stories. Modification to the interior spaces would be required to accommodate surplus plutonium disposition activities. No radioactive materials have been introduced into the building, so the modification would neither generate radioactive waste nor contribute a radiological dose to the construction workforce. In this alternative, the pit conversion facility would occupy about 14,000 m^2 (150,000 ft^2) on four levels of FPF. No new support buildings would have to be built, as the facility's needs would be met by existing facilities at INTEC.

A new two-story building of about 20,000 m^2 (215,000 ft^2) would be constructed for the MOX facility. As shown in Figure 2–25, this building would be south of FPF. A secure underground tunnel would connect the two buildings for special nuclear material transfers. This tunnel would be locked and alarmed under normal operating conditions, and subject to the same security measures on both sides as the building perimeters, both to ensure protection of the special nuclear materials and to maintain the independence of the MOX facility. The tunnel would be opened in accordance with safeguards and security procedures for the transfer of plutonium dioxide from the pit conversion facility to the MOX facility, and would be closed immediately upon completion of transfer activities. Other than being joined to it by this tunnel, the MOX facility would be independent of FPF, and would be inside its own fenced security area. In addition to the main process building, the MOX facility would require 2,300 m^2 (25,000 ft^2) of new support buildings throughout the INTEC Area. The proposed disposition facilities would use such existing INEEL services as sitewide security (although there would be additional security assigned to each of the disposition facilities), emergency services, environmental monitoring, and waste management.

Construction would commence in about 2001, with modifications to FPF for the pit conversion facility, and would continue through completion of the MOX facility in about 2006. Operations would commence in about 2004, with pit conversion, and would continue until about 2019, when the MOX facility has completed its mission. Operation of the MOX facility would not begin until the pit conversion facility had been operating for at least a year, so that feed material would be available for MOX fuel fabrication.

2.11.2 [Section deleted because alternative deleted.]

2.12 ALTERNATIVE 8: PIT CONVERSION AND MOX FUEL FABRICATION AT INEEL; IMMOBILIZATION AT HANFORD

INEEL: Pit Conversion in FPF; MOX Fuel Fabrication in New Construction
Hanford: Immobilization in FMEF and HLW Vitrification Facility

This alternative would involve locating the pit conversion facility in FPF and the MOX facility in new construction in the INTEC area at INEEL; and the immobilization facility in FMEF at Hanford. The pit conversion and MOX facilities would be implemented at INEEL as described for Alternative 7 in Section 2.11.

At Hanford, FMEF would be modified to house the immobilization facility as described for Alternative 4A in Section 2.8.1. Canister filling would be accomplished at the planned HLW vitrification facility scheduled for construction in the 200 East Area, about 24 km (15 mi) northwest of the 400 Area. Modification of FMEF would commence in about 2002 and continue through about 2004. Operation of the immobilization facility would commence in about 2005 and continue until about 2016.

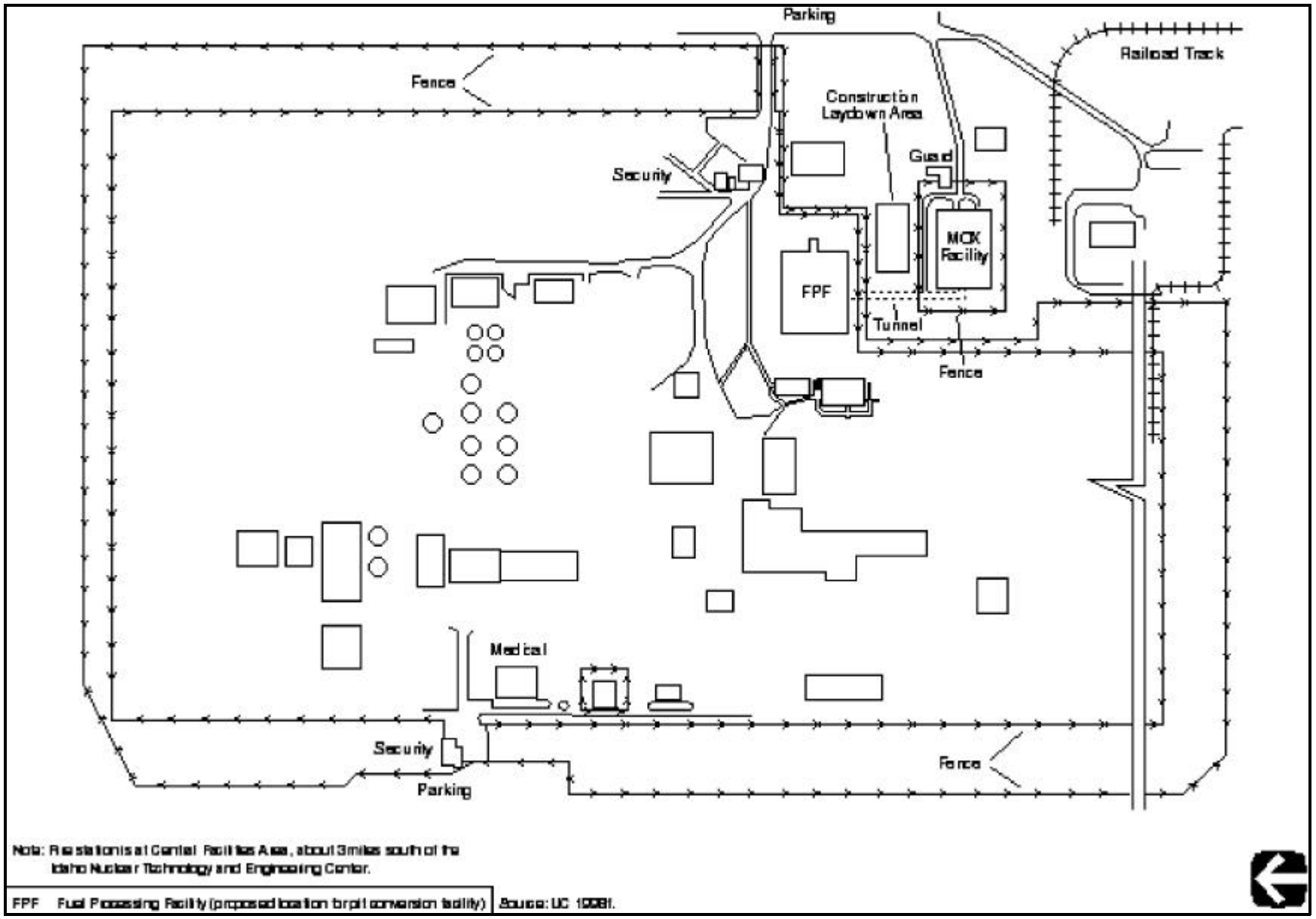

Figure 2–25. Proposed Pit Conversion and MOX Facility Locations in INTEC at INEEL

2.13 ALTERNATIVE 9: PIT CONVERSION AND MOX FUEL FABRICATION AT PANTEX; IMMOBILIZATION AT SRS

Pantex: Pit Conversion and MOX Fuel Fabrication in New Construction
SRS: Immobilization in New Construction and DWPF

2.13.1 [Section heading deleted.]

This alternative would involve locating both the pit conversion and the MOX facilities at Pantex, and the immobilization facility in new construction near the area currently designated for APSF at SRS. In addition, the canister receipt area at DWPF in S-Area would be modified as described in Section 2.4.2.1 to accommodate receipt and processing of the canisters transferred from the immobilization facility for filling with vitrified HLW. The immobilization facility would be as described in Section 2.10.1.

At Pantex, the pit conversion and MOX facilities would be in new construction in Zone 4 West (see Figure 2–26). The pit conversion facility in this alternative would be the same as that described in Section 2.8.1. For the MOX facility, a new two-story building of about 20,000 m^2 (215,000 ft^2) would be constructed south of the pit conversion facility. A secure underground tunnel would connect the two buildings for special nuclear material transfers.[21] This tunnel would be locked and alarmed under normal operating conditions, and subject to the same security measures on both sides as the building perimeters, both to ensure protection of the special nuclear materials and to maintain the independence of the MOX facility. The tunnel would be opened in accordance with safeguards and security procedures for the transfer of plutonium oxide from the pit conversion facility to the MOX facility, and would be closed immediately upon completion of transfer activities. Other than being joined by this tunnel, the MOX facility would be independent of the pit conversion facility, and would be inside its own fenced security area. In addition to the main process building, the MOX facility would require 2,300 m^2 (25,000 ft^2) of new support buildings throughout Zone 4 West. TRU waste storage would be provided in the main pit conversion and MOX facilities or in ancillary facilities. The proposed disposition facilities would use such existing Pantex services as sitewide security (although there would be additional security assigned to each of the disposition facilities), emergency services, environmental monitoring, and waste management.

Construction at Pantex would commence in about 2001 with the pit conversion facility, and continue through completion of the MOX facility in about 2006. Operations would commence in about 2004 with pit conversion, and continue until about 2019, when the MOX facility has completed its mission. Operation of the MOX facility would not begin until the pit conversion facility had been operating for at least a year, so that feed material would be available for MOX fuel fabrication.

2.13.2 [Section deleted because alternative deleted.]

[21] Current facility design includes a tunnel for material transfers. Intrasite transfers of special nuclear materials in accordance with current site practices may be considered in lieu of a tunnel in the facility design.